

**WHAT IS CLAIMED IS:**

1. An apparatus for reconstructing a high frequency part of a first signal, the apparatus comprising:

a frequency inverter which inverts a frequency of an input signal to generate a frequency-inverted input signal;

a band-pass filter which filters a high frequency part of the frequency-inverted input signal to generate a filtered signal;

a converter which shifts a frequency of the filtered signal so as not to generate an aliasing of the input signal and the filtered signal to generate a frequency-shifted signal; and

an adder which adds the frequency-shifted signal to the input signal.

2. The apparatus of claim 1, wherein the input signal comprises an audio signal.

3. The apparatus of claim 1, wherein the frequency inverter inverts the frequency of the input signal by multiplying the input signal by an external sine signal and an external cosine signal, the external sine signal and the external cosine signal having a first frequency substantially equivalent to a cut-off frequency of the input signal.

4. The apparatus of claim 1, wherein the converter shifts the frequency of the filtered signal by multiplying the filtered signal by an

external sine signal and an external cosine signal, the external sine signal and the external cosine signal having a first frequency substantially equivalent to a cut-off frequency of the input signal.

5. An apparatus for reconstructing a high frequency part of a first signal, the apparatus comprising:

a first generator which generates a cosine signal;

a first multiplier which multiplies an input signal by the cosine signal to generate a first multiplied signal;

a first low-pass filter which low-pass filters the first multiplied signal to generate a first low-pass filtered signal; and

a second multiplier which multiplies the first low-pass filtered signal by the cosine signal to generate a second multiplied signal.

6. The apparatus of claim 5, further comprising:

a second generator which generates a sine signal;

a third multiplier which multiplies the input signal by the sine signal to generate a third multiplied signal;

a second low-pass filter which low-pass filters the third multiplied signal to generate a second low-pass filtered signal;

a third generator which generates a negative sine signal;

a fourth multiplier which multiplies the second low-pass filtered signal by the negative sine signal to generate a fourth multiplied signal;

a summation unit which sums the second multiplied signal obtained by the second multiplier and the fourth multiplied signal obtained by the fourth multiplier to generate a summed signal; and

an adder which adds the summed signal to the input signal.

7. The apparatus of claim 6, wherein the signal comprises an audio signal.

8. A method of reconstructing a high frequency part of a first signal, the method comprising:

inverting a frequency of an input signal to generate a frequency-inverted input signal;

filtering a high frequency part of the frequency-inverted input signal to generate a filtered signal;

shifting a frequency of the filtered signal so as not to generate aliasing of the input signal and the filtered signal to generate a frequency-shifted signal; and

adding the frequency-shifted signal to the input signal.

9. The method of claim 8, wherein the input signal comprises an audio signal.

10. The method of claim 8, wherein the operation of inverting inverts the frequency of the input signal by multiplying the input signal by an external sine signal and an external cosine signal, the external sine and external cosine signals having a first frequency substantially equivalent to a cut-off frequency of the input signal.

11. The method of claim 8, wherein the operation of shifting step shifts the frequency of the filtered signal by multiplying the filtered signal by an external sine signal and an external cosine signal, the external sine and the external cosine signals having a first frequency substantially equivalent to a cut-off frequency of the input signal.

12. A method of reconstructing a high frequency part of a first signal, the method comprising:

generating a cosine signal;

first multiplying an input signal by the cosine signal to generate a first multiplied signal;

first low-pass filtering the first multiplied signal to generate a first low-pass filtered signal; and

second multiplying the first low-pass filtered signal by a cosine signal to generate a second multiplied signal.

13. The method of claim 12, further comprising:

generating a sine signal;

third multiplying the input signal by the sine signal to generate a third multiplied signal;

second low-pass filtering the third multiplied signal to generate a second low-pass filtered signal;

generating a negative sine signal;

fourth multiplying the second low-pass filtered signal by the negative sine signal to generate a fourth multiplied signal;

summing the second multiplied signal and the fourth multiplied signal to generate a summed signal; and

adding the summed signal to the input signal.

14. The method of claim 13, wherein the input signal comprises an audio signal.

15. A computer-readable recording medium on which a computer program for executing the method of claim 8 is recorded.

16. A computer-readable recording medium on which a computer program for executing the method of claim 12 is recorded.